CLAIMS

That which is claimed is:

1. A testing apparatus for a game ball, the testing apparatus comprising:

a support having a leading edge and a trailing edge, the support being tapered between the leading edge and the trailing edge, and the support having a longitudinal axis that extends through a first end and a second end of the support;

a mount located proximal the first end of the support and configured to secure to the game ball, the mount being rotatable about the longitudinal axis; and

a sensor that detects forces upon the game ball in a first direction and a second direction, the first direction corresponding with a direction between the leading edge and the trailing edge, and the second direction being orthogonal to both the first direction and the longitudinal axis.

2. The testing apparatus recited in claim 1, wherein the support has a airfoil configuration between the leading edge and the trailing edge.

3. The testing apparatus recited in claim 1, wherein the support is tapered between the first end and the second end.

4. The testing apparatus recited in claim 1, wherein the support has a constant width in the second direction.

5. The testing apparatus recited in claim 1, wherein the support includes a rotating element that extends along the longitudinal axis.

6. The testing apparatus recited in claim 5, wherein the mount is secured to the rotating element and rotates with the rotating element.

7. The testing apparatus recited in claim 5, wherein a tachometer is operatively connected to the rotating element and detects an angular velocity of the rotating element.

8. The testing apparatus recited in claim 5, wherein the testing apparatus further includes a motor that is operatively connected to the rotating element through a gear reducer.

9. The testing apparatus recited in claim 1, wherein the mount has a concave surface with a curvature that is substantially similar to a curvature of the game ball.

10. A testing apparatus for a game ball, the testing apparatus comprising:

a rotating element with a first end, a second end, and a longitudinal axis that extends through the first end and the second end, the rotating element being rotatable about the longitudinal axis;

a mount located proximal the first end of the rotating element and configured to secure to the game ball, the mount being rotatable with the rotating element about the longitudinal axis;

an airfoil extending around the rotating element, the airfoil having a leading edge and a trailing edge; and

a sensor that detects forces upon the game ball in a first direction and a second direction, the first direction corresponding with a direction between the leading edge and the trailing edge, and the second direction being orthogonal to both the first direction and the longitudinal axis.

11. The testing apparatus recited in claim 10, wherein the airfoil has a leading edge and the trailing edge, the airfoil being tapered between the leading edge and the trailing edge.

12. The testing apparatus recited in claim 11, wherein the support is tapered in an area that is between the first end and the second end of the rotating element.

13. The testing apparatus recited in claim 10, wherein the support has a constant width in the second direction.

14. The testing apparatus recited in claim 10, wherein the mount is secured to the first end of the rotating element.

15. The testing apparatus recited in claim 10, wherein a tachometer is operatively connected to the rotating element and detects a angular velocity of the rotating element.

16. The testing apparatus recited in claim 10, wherein the testing apparatus further includes a motor that is operatively connected to the rotating element through a gear reducer.

17. The testing apparatus recited in claim 10, wherein the mount has a concave surface with a curvature that is substantially similar to a curvature of the game ball.

18. A method of determining fluid properties of a game ball, the method comprising steps of:

rotating the game ball about an axis;

inducing fluid flow around the game ball and in a first direction that is orthogonal to the axis; and

sensing forces upon the game ball in the first direction and a second direction, the second direction being orthogonal to both the first direction and the axis.

19. The method recited in claim 18, wherein the step of inducing fluid flow includes placing the game ball in a wind tunnel.

20. The method recited in claim 18, further including a step of securing the game ball to a testing apparatus.

21. The method recited in claim 20, further including a step of selecting the testing apparatus to have:

a rotating element with a first end, a second end, and a longitudinal axis that extends through the first end and the second end, the rotating element being rotatable about the longitudinal axis;

a mount located proximal the first end of the rotating element and configured to secure to the game ball, the mount being rotatable with the rotating element about the longitudinal axis;

an airfoil extending around the rotating element, the airfoil having a leading edge and a trailing edge; and

a sensor that detects the forces.

22. The method recited in claim 21, wherein the step of inducing fluid flow includes placing the game ball and the testing apparatus in a wind tunnel.

23. The method recited in claim 18, further including steps of:

rotating a different game ball about an axis;

inducing fluid flow around the different game ball; and

sensing forces upon the different game ball.

24. The method recited in claim 23, further including a step of analyzing data relating to the forces upon the game ball and the forces upon the different game ball.

25. The method recited in claim 24, further including a step of incorporating characteristics from at least one of the game ball and the different game ball into a commercially-available game ball based upon the data.

26. A game ball manufactured through a method comprising steps of:

rotating a first test ball about an axis;

inducing fluid flow around the first test ball;

sensing forces upon the first test ball due to the fluid flow;

collecting a first set of data relating to the forces upon the first test ball;

rotating a second test ball about the axis;

inducing fluid flow around the second test ball;

sensing forces upon the second test ball due to the fluid flow;

collecting a second set of data relating to the forces upon the second test ball; and

incorporating characteristics from at least one of the first test ball and the second test ball into the game ball based upon an analysis of the first set of data and the second set of data.

27. The game ball recited in claim 26, wherein the characteristics are selected from a group consisting of a texture and a seam depth.

28. The game ball recited in claim 26, wherein the game ball is a soccer ball.

29. The game ball recited in claim 28, wherein the soccer ball includes a plurality of panels joined together by seams.

30. A method of selecting characteristics of a game ball, the method comprising steps of:

rotating a first test ball about an axis;

inducing fluid flow around the first test ball;

sensing forces upon the first test ball due to the fluid flow;

collecting a first set of data relating to the forces upon the first test ball;

rotating a second test ball about the axis;

inducing fluid flow around the second test ball;

sensing forces upon the second test ball due to the fluid flow;

collecting a second set of data relating to the forces upon the second test ball; and

incorporating characteristics from at least one of the first test ball and the second test ball into the game ball based upon an analysis of the first set of data and the second set of data.

31. The method recited in claim 30, further including a step of securing the first test ball to a testing apparatus.

32. The method recited in claim 30, further including a step of selecting the testing apparatus to have:

a support having a leading edge and a trailing edge, the support being tapered between the leading edge and the trailing edge, and the support having a longitudinal axis that extends through a first end and a second end of the support;

a mount located proximal the first end of the support and configured to secure to the first test ball, the mount being rotatable about the longitudinal axis; and

a sensor that detects forces upon the first test ball.

33. The method recited in claim 31, wherein the step of inducing fluid flow around the first test ball includes placing the first test ball and the testing apparatus in a wind tunnel.